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October 31, 2005
Date of Signature

Re:	Application of:	Ahmed
	Serial No.:	10/672,527
	Filed:	September 26, 2003
	For:	Building Control System Using Integrated MEMS Device
	Group Art Unit:	2125
	Examiner:	Ryan A. Jarrett
	Our Docket No.:	1867-0030
	Siemens Docket No.:	2003P14889US

TRANSMITTAL OF BRIEF ON APPEAL

Please find for filing in connection with the above patent application the following documents:

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Respectfully Submitted,

MAGINOT, MOORE & BECK, LLP

October 31, 2005

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Enclosures

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Sir:

This is an appeal under 37 CFR § 41.31 to the Board of Patent Appeals and Interferences of the United States Patent and Trademark Office from the rejection of claims 1, 2, 5-12 and 21-36 of the above-identified patent application. Claims 1, 2, 5-12 and 21-36 were finally rejected in the Office Action dated May 31, 2005. A check in the amount of **$500.00** is enclosed herewith to cover the fee required under 37 CFR § 41.20(b)(2). Also, please provide any extension of time which may be necessary and charge any fees which may be due to Deposit Account No. 13-0014, but not to include any payment of issue fees.

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(1) REAL PARTY IN INTEREST

Siemens Building Technologies, Inc. is the owner of this patent application, and therefore the real party in interest.

(2) RELATED APPEALS AND INTERFERENCES

There are no appeals or interferences related to this patent application.

(3) STATUS OF CLAIMS

Claims 1, 2, 5-12 and 21-36 are pending in the application.

Claims 1, 2, 5-12 and 21-36 stand rejected and form the subject matter of this appeal. Claims 1, 3, 5-12 and 21-36 are shown in the Appendix attached to this Appeal Brief.

(4) STATUS OF AMENDMENTS

Applicants filed a Response to Office Action dated November 1, 2004 ("First Response") responsive to an Office Action dated June 30, 2004. A second Office Action dated December 28, 2004 was designated by the Examiner to be responsive to the First Response. On March 28, 2005, Applicants filed a Response to Office Action ("Second Response") responsive to the second office action dated December 28, 2004. The Examiner issued a final office action dated May 31, 2005 ("Final Office Action") responsive to the Second Response.

(5) SUMMARY OF THE CLAIMED SUBJECT MATTER

Claim 1 is directed to an apparatus for use in a building automation system. (See, e.g., system illustrated in Fig. 1). The building automation system includes one or more devices that are operable to generate control outputs based on set point information and process value information from one or more sensors. By way of non-limiting example, the room control module 202 of Fig. 2 is operable to receive set point information and process value from sensors, and is operable to generate control outputs based on this information. (See Fig. 3, which describes the operations of the module 202; Specification at p.21, line 16 to p.25, line 2).

Referring again to the general invention of claim 1, the building automation system further includes one or more actuators operable to perform an operation responsive to at least some of the control outputs. (See, e.g., actuator 262 of module 208 of Fig. 2).

The apparatus according to claim 1 includes at least one microelectromechanical (MEMs) sensor device operable to generate a process value and a processing circuit. (E.g., the module 630, MEMs sensor suite 725, processing circuit 715 of Fig. 7a; Specification at p.37, lines 4-8). The processing circuit is operable convert the process value to an output digital signal that is configured to be communicated to another element of the building automation system. (E.g. processing circuit 715 of Fig. 7a; Specification at p.43, lines 10-16; see also Fig. 7b).

The at least one MEMs sensor device and the processing circuit are integrated onto a first substrate. (E.g., the module 630 of Fig. 7a; Specification at p.32, lines 6-19; Figs. 12a, 12b). The processing circuit is further operable to generate a first control output based on at least one set point and the process value obtained from the at least one MEMs sensor device.

(E.g. steps 760, 765 of Fig. 7b). The output digital signal is representative of the first control output. (E.g. W_{FLO} of Fig. 7b).

Claim 21 is directed to an apparatus for use in a building automation system, the building automation system including one or more devices that are operable to generate a control output based on set point information and process value information from one or more sensors. By way of non-limiting example, the building control system of Fig. 1 includes the room control module 202 of Fig. 2. The module 202 is operable to receive set point information and process value from sensors, and is operable to generate control outputs based on this information. (See Fig. 3, which describes the operations of the module 202; Specification at p.21, line 16 to p.25, line 2).

The claimed apparatus includes at least one MEM sensor device, a processing circuit and a battery. (E.g., the module 630, sensor suite 725, processing device 715 of Fig. 7a; battery 1204 of Fig. 12a; Specification at p.32, lines 6-19; Figs. 12a, 12b). The MEMs sensor device is operable to generate a process value (E.g. step 755 of Fig. 7b; Specification at p.39, line 18-22).

The processing circuit is operably connected to the at least one MEMs sensor device to receive the process value therefrom. (E.g. processing circuit 715, sensor suite 725 of Fig. 7a). The processing circuit is operable to convert the process value to an output digital signal configured to be communicated to another element of the building automation system. (E.g. processing circuit 715 of Fig. 7a; Specification at p.43, lines 10-16; see also Fig. 7b). The battery is operably connected to provide power to at least the processing circuit. In the non-limiting example of the disclosed embodiment, Figs. 12a and 12b show a general architecture

for several modules in Figs. 7a, 8a, 9a, 10a and 11a. Thus, the module 630 of Fig. 7a has the general construction shown in Fig. 12a and 12b and thus includes the battery 1204.

Referring again generally to claim 21, the at least one MEMs sensor device and the processing circuit are integrated onto a first substrate, and the battery is secured to the first substrate. (See Figs 12a and 12b).

Claim 26 is directed to an apparatus for use in a building automation system, the building automation system including one or more devices that are operable to generate a control output based on set point information and process value information from one or more sensors. By way of non-limiting example, the building control system of Fig. 1 includes the room control module 202 of Fig. 2. The module 202 is operable to receive set point information and process value from sensors, and is operable to generate control outputs based on this information. (See Fig. 3, which describes the operations of the module 202; Specification at p.21, line 16 to p.25, line 2).

Referring again generally to claim 21, the claimed apparatus includes at least one MEM sensor device, a processing circuit and a non-volatile memory. (E.g., the module 630, sensor suite 725, processing device 715, EEPROM 720 of Fig. 7a). The MEMs sensor device is operable to generate a process value. (E.g. step 755 of Fig. 7b; Specification at p.39, line 18-22).

The processing circuit is operably connected to the at least one MEMs sensor device to receive the process value therefrom. (E.g. processing circuit 715, sensor suite 725 of Fig. 7a). The processing circuit is operable to convert the process value to an output digital signal

configured to be communicated to another element of the building automation system. (E.g. processing circuit 715 of Fig. 7a; Specification at p.43, lines 10-16; see also Fig. 7b).

The programmable non-volatile memory operably is coupled to the processing circuit and is supported by the first substrate. In the non-limiting example of the disclosed embodiment, Figs. 12a and 12b show a general architecture for several modules in Figs. 7a, 8a, 9a, 10a and 11a. Thus, the module 630 of Fig. 7a has the general construction shown in Fig. 12a and 12b. As shown in Figs. 12a and 12b, the EEPROM 1254 is supported on a first substrate 1202. (See specification at p.33, lines 2-11).

Referring again generally to claim 21, the at least one MEMs sensor device and the processing circuit are integrated onto a first substrate. (See Figs 12a and 12b; Specification at p.33, lines 2-11).

(6) ISSUES

Whether claims 27, 31 and 35 are unpatentable under 35 U.S.C. § 112 as allegedly failing to comply with the written description requirement.

Whether claims 1, 2, 5, 7, 11, 12 and 26-36 are unpatentable under 35 U.S.C. § 102(b) as allegedly being anticipated by PCT International Application Publication WO 00/54237 to Graviton (hereinafter "Graviton").

Whether claims 6, 8-10 and 21-25 are unpatentable under 35 U.S.C. § 103(a) as allegedly being obvious over Graviton.

(7) ARGUMENT

I. The Written Description Rejection of Claims 27, 31 and 35 is in Error

The Examiner has rejected claims 27, 31 and 35 as allegedly failing to satisfy the written description requirement. In particular, the Examiner stated that:

> The specification appears to generally disclose that the EEPROM stores configuration information. But it is not clear where the specification explicitly teaches that the EEPROM is configured to store information generated by an external device selecting less than all of the available functions of the apparatus to be enabled.

(Final Office Action at p.4).

Applicants submit that specification as filed *explicitly* teaches that an EEPROM is configured to store information generated by an external device selecting less than all of the available functions of the apparatus.

As an initial matter, the original Specification at p.10, lines 9-19 teach that a sensor module 204 "may be programmed to enable" one of a number of sensing functions. Enabling one of several available sensing functions constitutes "selecting less than all of the available functions", as claimed. (See also description of MEMs sensors 278 discussed in Specification at p.19, lines 1-6). Because the device "may be programmed", it is clear that the commands selecting one of the functionalities necessarily originates from an external device. Also, the Specification clearly states that a "single hub module design may be manufactured . . . for use in a variety of HVAC sensing applications, each hub module 202 thereafter *being configured for its particular use*." (Specification at p.19, lines 6-8)

The Specification also explicitly discloses that the programmed configuration information discussed above is stored in an EEPROM or non-volatile memory. (Specification at p.19, line 20 to page 20, line 2).

Moreover, *all* of the above features are plainly disclosed on pages 34 and 35 of the

disclosure, which describe the EEPROM 1254 of the device of Figs. 12a and 12b. In particular, the page 34 expressly states that configuration information stored in the EEPROM includes information identifying which of the available sensing functions (i.e. less than all) that are enabled. (Specification at p.34, lines 13-17). Page 35 expressly states that the configuration information may be downloaded from an external device. (Specification at p.35, lines 12-21).

Because the specification specifically as originally filed adequately describes and teaches the elements of claims 27, 31 and 35, it is submitted that the Examiner's rejections of claims 27, 31 and 35 under 35 U.S.C. §112 are in error and should be reversed.

II. The Prior Art Rejection of Claim 1 is in Error

In the Final office action, the Examiner rejected claim 1 as allegedly being anticipated by Graviton. As discussed above, claim 1 recites a device having a processing circuit and a MEMs sensor integrated on a first substrate. The processing circuit is operable to generate a first control output based on at least one set point and a process value obtained from the MEMs sensor.

Graviton fails to disclose a device that includes a processing circuit "operable to generate a first control output based on at least set point and the process value obtained form the at least one MEMs sensor device", as called for in claim 1. As clearly taught by Graviton at page 16, line 30 to page 17, line 9, control outputs are generated by a separate node 70 in Graviton. Control outputs are *not* generated by the sensor assembly 50.

A. The Examiner's Rejection

The Examiner alleges that the sensor device 50 of Fig. 3 of Graviton *does* generate control values. (Final Office Action at p.5). In support of this assertion, the Examiner cites a brief statement about *an actuator assembly* that states that "actuator commands may be received via the network, e.g., the Internet, from the end user, a node, or another sensor assembly, or may be generated at the actuator assembly such as through a processor". (*Id.* citing Graviton at p.6, lines 19-29). In other words, because the actuator assembly can receive commands from "another sensor assembly", the specific sensor assembly 50 disclosed in another part of the application inherently must be able to generate control signals. Applicants disagree.

As discussed above, the sensor assembly 50 is *subsequently* described in detail and clearly is not disclosed as being capable of generating control outputs. (Graviton at pp.15-16).

Regardless, even the Examiner's assumption was correct, (i.e., that page 6, lines 9-19 of Graviton are meant to describe additional functionality of the sensor assembly 50 of Fig. 4), such additional functionality does not include generating a control output based *on at least one set point* and a process value from a MEMs sensor. Nowhere in Graviton is a sensor assembly disclosed to have the capability of generating a control output based on a set point *and* a process value.

As is known in the control system art, a set point is a variable that represents a desired output of a control system. An example of a set point would be a thermostat temperature setting.

Nothing in Graviton describes a sensor module that is capable of receiving a "set point", much less a sensor module that is capable of performing control algorithms that utilize the set point and a process variable (sensor output) to generate control signals. By contrast, Figs. 7B, 8B and 9B of the Present Application show examples of the claimed processing circuit that uses set points (*W* variables) and process variables (*X* variables) and generates control signals (*Y* variables) therefrom.

Thus, because Graviton does not teach an apparatus that has a processing circuit and a MEMs sensor integrated on a substrate, wherein the processing circuit is operable to generate a control output based at least one set point and the process value generated by the MEMs sensor, it is submitted that Graviton does not teach or suggest each and every element of claim 1. For at least this reason, the anticipation rejection of claim 1 over Graviton is in error and should be reversed.

III. Claims 2, 3, 5, 7, 11 and 12

Claims 2, 3, 5, 7, 11 and 12 all stand rejected as anticipated by or obvious over Graviton. Claims 2, 3, 5, 7, 11 and 12 all depend from and incorporate all of the limitations of claim 1. As discussed above, Graviton fails to teach or suggest a processing circuit that is integrated with a MEMS sensor and generates a control output based on set point information and sensor values. Accordingly, for at least the same reasons as those discussed above in connection with claim 1, it is respectfully submitted that the rejections of claims 2, 3, 5, 7, 11 and 12 are in error and should be withdrawn.

IV. Claims 21-25

Claim 21 also stands rejected as allegedly being obvious over Graviton. Claim 21 includes a limitation directed to a battery that is *secured to the substrate* on which a MEMS sensor and a processing circuit are integrated. Graviton does not teach an apparatus that includes a processing circuit and a MEMS sensor integrated onto a first substrate, wherein the apparatus further includes a battery secured to the first substrate.

Graviton briefly mentions the existence of a battery. However, the solitary reference to a battery on page 15 at line 21, which indeed does not even positively recite a battery, is insufficient to suggest a battery secured to a substrate. In particular, the solitary reference to a battery on page 15 is set forth below:

> Preferably, the sensors are relatively small (so as not to perturb the environment which they are sensing), inexpensive, low/power sensors prepared preferably, the sensors may operate for one or more days without user intervention, having minimal need for calibration, zeroing, reagent topping, cleaning and/or *battery changing*.

(Graviton at p.15, line 17-21).

This single reference implies the possible use of battery power, but does describe what the battery is secured to, and certainly does not suggest that the battery is secured to the first substrate. Moreover, the entire sentence looks like a wish list. The sentence describes desired features but does not describe how or why a device could be generated such that it can "operate for one or more days without user intervention, having minimal need for calibration, zeroing, reagent topping, cleaning and/or battery changing." Further, not a single description of the actual sensor assembly 50 mentions or describes battery use, much less how the battery is physically supported.

A. The Examiner's Obviousness Rejection

The Examiner admitted that Graviton does not teach a battery secured to the substrate on which the MEMs device and the processing circuit are integrated. (Final Office Action at p. 8). The Examiner instead alleged that "such devices are well known in the art and have well known advantages, such as providing a compact device with little noise effects". (*Id.*) However, the Examiner provides no evidence that "such devices" are "well known and have well known advantages", or that such devices *were* well known at the time the present invention was made.

The Examiner has therefore failed to make out a prima facie case of obviousness. Indeed, even if the Examiner's assertion were correct, which it is not, the Examiner has not alleged that "such devices" were well known at the time the invention was made.

It is therefore respectfully submitted that the Examiner's obviousness rejection of claim 21 is in error and should be reversed.

Claims 22-25 depend from and incorporate all of the limitations of claim 21. Accordingly, the obviousness rejections of claims 22-25 should be reversed for at least the same reasons.

V. **Claims 6 and 8-10**

Claims 6 and 8-10 all stand rejected as allegedly being obvious over Graviton. Claims 6 and 8-10 all depend from and incorporate all of the limitations of claim 1. Accordingly, claims 6 and 8-10 are allowable over Graviton for at least the same reasons as those set forth above in connection with claim 1. In addition, claims 6 and 8-10 all include, directly or indirectly, a limitation directed to a battery secured to the substrate on which the

processing circuit and the MEMs device are integrated. As a consequence, claims 6 and 8-10 are allowable over Graviton for at least the same reasons as those set forth above in connection with claim 21.

For either or both of the foregoing reasons, the obviousness rejection of claims 6 and 8-10 over Graviton should be reversed.

VI. Claims 26, 28-30 and 32-36

Claims 26, 28-30 and 32-36 all stand rejected as allegedly being anticipated by Graviton. Claim 26 is similar to claim 1, except that claim 26 includes a limitation directed to a non-volatile programmable memory supported by the substrate and coupled to the processing circuit. Claims 28-30 and 32-36 have at least the same limitations as they all depend directly or indirectly from claim 26.

Graviton does not teach a non-volatile programmable memory that is supported by the substrate that includes the processing circuit and the MEMS sensor.

In the rejection of claim 26, the Examiner cites Graviton at page 15, line 31 to page 16, line 3 as teaching an EEPROM that is supported on the processing circuit/MEMs substrate. (Final Office Action at p.6). The cited passage is reproduced below:

> The system preferably includes a single chip including both the sensor, required logic components or processing components, e.g., microprocessor, and a wireless transmission component, e.g., radio frequency generator, all included within a single chip. By integrating the sensing, processing (optional memory), and transmission functionalities, the device may be made compact and robust.

(Graviton at p.15 line 31 to p.16, line 3). There is no mention that the "optional memory" of the processing component may be an EEPROM or other programmable non-volatile memory.

In further discussion of the embodiment of Fig. 3, Graviton specifically discloses the use of a RAM, ROM or mass storage memory may be "internal" or external to the processor.

Thus, assuming the processor is integrated onto the substrate, the RAM, ROM or mass storage is arguably supported by the substrate. However, RAM and ROM are not programmable non-volatile memory. If mass storage means a hard disk drive or optical disk drive, then it can hardly be integrated into the microprocessor. Regardless, Graviton specifically does *not* teach or suggest that programmable non-volatile memory may be embedded in the processor on the substrate.

Graviton does discuss, in an unrelated part of the application, the possible use of flash memory, but not as integrated on the sensor assembly substrate. In particular, Graviton mentions "flash memory" at pages 4 and 5. These passages are provided below:

> In the preferred embodiment, the sensor assembly containing the digital sensor includes a processor. Such a processor may comprise a microprocessor and associated components including memory (RAM, ROM, mass storage, Flash, optical memory, Biomemory, etc.) and supporting components (e.g. clock bus).

This passage clearly does *not* suggest that the "associated components including memory" would be incorporated onto, or even supported by, the same substrate as that on which the processing circuit and MEMS sensor are implemented.

Because Graviton fails to teach a programmable non-volatile memory supported by a substrate that includes both a processing circuit and a MEMS sensor, Graviton fails to teach or suggest all of the limitations of claim 26. For at least this reason, the anticipation rejection of claim 26 over Graviton should be reversed.

Claims 28-30 and 32-36 depend from and incorporate all of the limitations of claim 26. Accordingly, the rejection of claims 28-30 and 32-36 over Graviton should be reversed at least the same reasons.

VII. Claims 27, 31 and 35

Claims 27, 31 and 35 depend from and incorporate all of the limitations of claim 26. Accordingly, the rejection of claims 27, 31 and 35over Graviton should be reversed at least the same reasons as those set forth above in connection with claim 26.

In addition, claims 27, 31 and 35 all contain additional limitations that are not taught or disclosed in Graviton. For example, claim 27 recites that the non-volatile memory is configured to "store information generated by an external device selecting less than all of the available functions of the apparatus to be enabled." Similarly, claims 31 and 35 recite that the EEPROM is configured to store "function enabling information identifying as enabled less than all of the possible sensing functions available to be enabled in the sensor". As discussed above

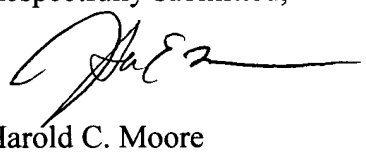
Graviton only teaches that the memory "may be utilized to store sensed data as provided from the sensors . . . and may also be utilized to store program information which achieves the functionality described herein." (Graviton at p.16, lines 27-29). None of these functions suggest that "less than all" of possible functions may been selected, nor that such selection is stored in non-volatile memory.

As a consequence, claims 27, 31 and 35 are patentable over Graviton for reasons independent of those discussed above in connection with claim 26.

(8) CONCLUSION

For all of the foregoing reasons, claims 1, 3, 5-8, 12, 14 and 21 are not unpatentable under 35 U.S.C. § 102(b) or 35 U.S.C. § 103(a). As a consequence, the Board of Appeals is respectfully requested to reverse the rejection of these claims.

Respectfully submitted,



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CLAIM APPENDIX

Claim 1. An apparatus for use in a building automation system, the building automation system including one or more devices that are operable to generate control outputs based on set point information and process value information from one or more sensors, the building automation system further including one or more actuators operable to perform an operation responsive to at least some of the control outputs, the apparatus comprising:

at least one microelectromechanical (MEMs) sensor device operable to generate a process value;

a processing circuit operable convert the process value to an output digital signal configured to be communicated to another element of ~~a~~ the building automation system; and

wherein the at least one MEMs sensor device and the processing circuit are integrated onto a first substrate; and

wherein the processing circuit is further operable to generate a first control output based on at least one set point and the process value obtained from the at least one MEMs sensor device, and wherein the output digital signal is representative of the first control output.

Claim 2. The apparatus of claim 1 wherein the processing circuit includes a microelectronics A/D converter, the microelectronics A/D converter operable to receive the process value from the at least one MEMs sensor device and generate a digital sensor signal therefrom.

Claims 3-4 (canceled).

Claim 5. The apparatus of claim 1 wherein the at least one MEMs sensor device includes a plurality of MEMs sensor devices.

Claim 6. The apparatus of claim 1 further comprising a battery secured to the first substrate.

Claim 7. The apparatus of claim 1 wherein the first substrate is a semiconductor substrate.

Claim 8. The apparatus of claim 6 wherein the battery further comprises a lithium ion battery layer.

Claim 9. The apparatus of claim 8 further comprising a power management circuit operably coupled to the lithium ion battery layer.

Claim 10. The apparatus of claim 8 further comprising a second substrate, and wherein the lithium ion battery layer is disposed between the first substrate and the second substrate.

Claim 11. The apparatus of claim 1 further comprising an RF communication circuit operably coupled to the processing circuit.

Claim 12. The apparatus of claim 1 further comprising an EEPROM operably coupled to the processing circuit.

Claims 13-20 (canceled).

Claim 21. An apparatus for use in a building automation system, the building automation system including one or more devices that are operable to generate a control output based on set point information and process value information from one or more sensors, the apparatus comprising:

at least one microelectromechanical (MEMs) sensor device operable to generate a process value;

a processing circuit operably connected to the at least one MEMs sensor device to receive the process value therefrom, the processing circuit operable to convert the process value to an output digital signal configured to be communicated to another element of the building automation system;

a battery operably connected to provide power to at least the processing circuit; and

wherein the at least one MEMs sensor device and the processing circuit are integrated onto a first substrate, and wherein the battery is secured to the first substrate.

Claim 22. The apparatus of claim 21 wherein the first substrate is a semiconductor substrate.

Claim 23. The apparatus of claim 22 wherein the battery further comprises a lithium ion battery layer.

Claim 24. The apparatus of claim 23 further comprising a power management circuit operably coupled to the lithium ion battery layer.

Claim 25. The apparatus of claim 23 further comprising a second substrate, and wherein the lithium ion battery layer is disposed between the first substrate and the second substrate.

Claim 26. An apparatus for use in a building automation system, the building automation system including one or more devices that are operable to generate a control output based on set point information and process value information from one or more sensors, the apparatus comprising:

at least one microelectromechanical (MEMs) sensor device operable to generate a process value;

a processing circuit operably connected to the at least one MEMs sensor device to receive the process value therefrom, the processing circuit operable to convert the process value to an output digital signal configured to be communicated to another element of the building automation system;

a programmable non-volatile memory operably coupled to the processing circuit and supported by the first substrate; and

wherein the at least one MEMs sensor device and the processing circuit are integrated onto a first substrate.

Claim 27. The apparatus of claim 26, wherein the programmable non-volatile memory comprises an EEPROM configured to store information generated by an external device selecting less than all of the available functions of the apparatus to be enabled.

Claim 28. The apparatus of claim 26, wherein the programmable non-volatile memory is further operable to store configuration information relating to the apparatus.

Claim 29. The apparatus of claim 28, wherein the configuration information includes identification information for the apparatus.

Claim 30. The apparatus of claim 29, wherein the configuration information includes a network address corresponding to the apparatus.

Claim 31. The apparatus of claim 28, wherein the configuration information includes function enabling information, the function enabling information identifying as enabled less than all of the possible sensing functions available to be enabled on the sensor.

Claim 32. The apparatus of claim 28, wherein the configuration information includes system RF communication parameters.

Claim 33. The apparatus of claim 27, wherein the EEPROM is further operable to store configuration information relating to the apparatus.

Claim 34. The apparatus of claim 33, wherein the configuration information includes identification information for the apparatus.

Claim 35. The apparatus of claim 33, wherein the configuration information includes function enabling information, the function enabling information identifying as enabled less than all of the possible sensing functions available to be enabled on the sensor.

Claim 36. The apparatus of claim 27, wherein the EEPROM is integrated on to the first substrate.